

MAGNESIUM DEFICIENCY OF PITTOSPORUM AND OTHER CROPS

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Magnesium is an element which is commonly deficient in Florida soils. This is illustrated by the fact that more than half of the approximately 700,000 tons of agricultural lime sold in Florida during 1970-71 was dolomite, which contains magnesium, and that more soluble magnesium fertilizers were used here than in any other state (5). Magnesium is deficient in areas of heavy rainfall (2) and leaches from sandy soils more readily than calcium. Therefore, the desired Ca:Mg ratio of 5-10:1 has a tendency to become imbalanced.

Magnesium is a vital metallic component of chlorophyll (6) and often may not be available in sufficient amounts to supply the needs of plants. Without adequate chlorophyll, photosynthesis is adversely affected, and without the manufacture of enough carbohydrates nutritional deficiencies occur.

Japanese pittosporum, *Pittosporum tobira* Ait., has been observed as one of the most susceptible plants to magnesium deficiency in Florida (4). Other woody ornamentals which apparently exhibit a magnesium deficiency are: tung oil tree, *Aleurites fordii* Hemsl.; orchid-tree, *Bauhinia variegata* L.; citrus species and varieties, *Citrus* sp., Canary Island date palm, *Phoenix canariensis* Chabaud.; Nagi podocarpus, *Podocarpus nagi* D. Don.; poinsettia, *Poinsettia pulcherrima* Willd.; and muscadine grape, *Vitis rotundifolia* Michx. (4). Numerous other ornamentals appear to develop magnesium deficiency in Florida. Some trees, field crops, and vegetables also exhibit this deficiency, particularly in the sand hills of the state.

SYMPTOMS. In container-grown Japanese pittosporum, magnesium deficiency is characterized by a chlorosis which develops only on mature leaves or old summer shoots. Chlorotic areas develop between the veins of the upper part of the leaf. These chlorotic areas enlarge and merge to form large chlorotic areas with a triangular-shaped green area at the base of the leaf (fig. 1). Eventually complete chlorosis can occur followed by defoliation. Chlorosis (commonly known as bronzing (3)), dieback, and defoliation are known to occur on magnesium-deficient citrus in Florida (1). Symptoms can vary as in cotton and blueberry leaves which become purplish-red except for the stem and veins. Soybean leaves take on an overall yellowish cast, while apple trees and tomatoes tend to show grayish spots of dead tissue (2).

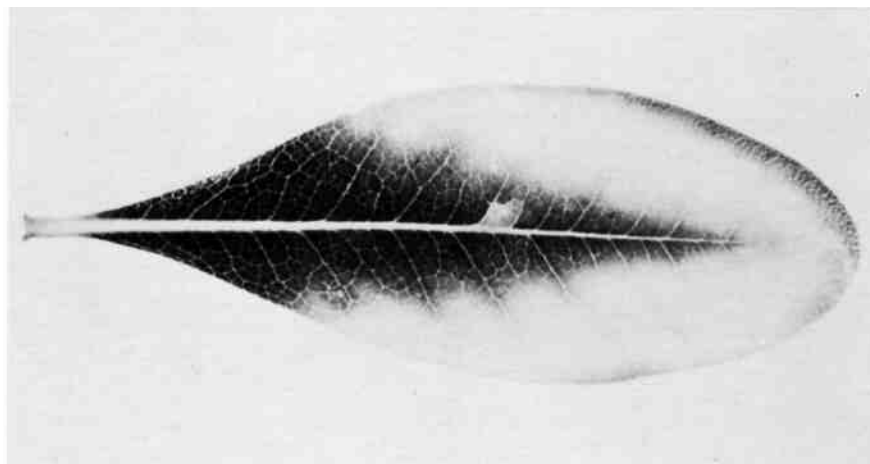


Fig. 1. Magnesium deficiency of *Pittosporum tobira* showing characteristic triangular-shaped green area at the base of the chlorotic leaf.

CONTROL. Dolomite is usually used at the rate of 7-10 lbs per cu yd of potting mix which normally supplies the necessary magnesium requirements. However, either this practice is not always followed or excessive leaching may result in magnesium deficiency. Besides dolomite, magnesium may also be supplied by the use of magnesium sulfate (4, 6) and other more expensive sources such as sulfate of magnesium phosphate or sulfate of potash magnesium (2, 4).

In applying magnesium to prevent or correct a deficiency, it is important that the soil or potting mix be tested to determine the actual need. Testing is available at the University of Florida soil testing laboratory in Gainesville and at some branch IFAS research stations. County Agricultural Extension Directors can provide assistance in soil sampling and test interpretation.

For citrus, a leaf analysis has been suggested, and where magnesium deficiency symptoms persist, apply one-half the amount of Mg as nitrogen until symptoms disappear (5).

LITERATURE CITED.

1. Anonymous. 1979. Magnesium spray halts dieback. Agrichemical Age 23(6):8F.
2. Bear, F. E. 1953. Soils and fertilizers. (Fourth Edition) John Wiley & Sons, Inc., New York. p. 286.
3. Bryan, O. C. 1961. Malnutrition symptoms of citrus. Fla. Dept. Agric. Bull. No. 93. p. 16.
4. Dickey, R. D., E. W. McElwee, C. A. Conover, and J. N. Joiner. 1978. Container growing of woody ornamental nursery plants in Florida. Agric. Exp. Stn. Bull. 793. p. 46.
5. Jones, J. B., Jr., M. C. Blout, and S. R. Wilkinson (Symposium Committee). 1972. Magnesium in the environment: soils, crops and animals & man. Div. Agric., Ft. Valley, GA. p. 309-310, 316.
6. Roberts, D. A., and C. W. Boothroyd. 1972. Fundamentals of plant pathology. W. H. Freeman & Co., San Francisco, p. 336-337.
7. Tisdale, S. L., and W. L. Nelson. 1956. Soil fertility and fertilizers. The Macmillan Co., New York. p. 92.